

REMARKS

In response to the Office Action, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments. Claims 4 and 12-15 are canceled, and claims 1, 3, 5, 7, 9, 16, 17, 23, 24, and 38 are amended. Claims 1-3, 5-11, 16-24, and 38 are currently pending.

Election of Claims

Examiner understood the withdrawal of Claim 38 and the election of Claim 39 to be in error. Applicant respectfully acknowledges this error and acknowledges Examiner's characterization of the previous election without traverse of Group 1, Claims 1-24 and 38.

Amended Claims

Claims 1, 3, 5, 7, 9, 16, 17, 23, 24, and 38 are amended as illustrated in the foregoing section **Amendments to the Claims**. The claim amendments have been made to clarify the scope of the claims and/or for readability. The amendments do not add new matter because support for the amendments is found in the application and claims as filed.

Discussion of the Claim Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected independent claims 1-20, 23, 24, and 38 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,385,496 ("Irwin"), in view of European Patent Publication No. EP 0156176 ("Zeitlin"). The Examiner also rejected claims 21 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Irwin in view of Zeitlin as applied to claim 9, and further in view of U.S. Patent No. 6,048,721 ("Armstrong").

The Cited Art Does Not Teach or Suggest All Elements of the Claims

Applicant respectfully traverses the above-listed section 103 rejections and submits that the cited art does not establish *prima facie* obviousness of a claimed invention because all the claim limitations are not taught or suggested by the prior art, as required. *See* M.P.E.P. § 2143.03.

Claim 1 (amended herein) recites a system for controlling bioreactors where the system comprises

"a utility tower configured to sense conditions in said first and second bioreactors and provide services to said first and second bioreactors that affect the conditions in said first and second bioreactors..." and

“a controller configured with bioreactor control processes to monitor conditions in said first and second bioreactors and to control said utility tower functionality for affecting conditions in said first and second bioreactors...” (emphasis added)

As claim 1 recites, the utility tower and controller communicate via a first and second communication network. The utility tower receives data related to a condition in a bioreactor and sends information related to the data to the controller over the first communication network. The controller runs a bioreactor control processes (e.g., a programmed process) and receives information related to a condition in the bioreactor from the utility tower over the first communication network. Based on the information and the bioreactor control process running on the controller, the controller generates a control signal that will change a condition in the bioreactor (for example, direct the utility tower to provide a service to the bioreactor) and sends the control signal to the utility tower over the second communication network. In one example the first network is an H1 FOUNDATION™ fieldbus and the second network is a DeviceNet™ bus. *See* paras. 0037-0039, and claim 17. Importantly, the two networks provide an efficient and cost-effective way to communicate information between a controller (which runs the bioreactor processes) and a utility tower (which provides services to bioreactors); nowhere are such elements disclosed in either Zeitlin, Irwin, or Armstrong, singly or in combination.

Irwin and Zeitlin disclose significantly different control systems than claimed here, apparently designed for different control structures. Irwin is generally directed to methods of indirect referencing in process control routines. *See Irwin*, col. 3, lines 21-41. The routines are stored in a controller and a workstation is used to facilitate the storing. *See* col. 1, line 57-col. 2, line 26. In the Office Action, Examiner equated Irwin’s controller 12 with the utility tower of the current application and equated Irwin’s workstation 14 with the controller of the current application. However, Applicant respectfully submits that Irwin discloses only an Ethernet connection between the asserted controller 12 and workstation 14. Nowhere does Irwin disclose a first and second network connecting the controller and the utility tower, as claimed. *See* col. 4, lines 32-67, col. 5, lines 26-41.

Moreover, the configuration of the system components disclosed in Irwin is significantly different from the limitations of claim 1. In Irwin, the “utility tower” (controller 12) includes a memory 22 for storing configuration data and process control routines to be used to control the

process 16 and includes a processor 24 that executes the process control routines to implement a process control strategy." Irwin, col. 4, 58-62. As recited in the limitations of claim 1, the utility tower provides services to the bioreactors but does not run the bioreactor control process. Furthermore, the "controllers" (workstations 14) in Irwin are used to design control routines and download the routines but do not run a bioreactor control process. Irwin, col. 4, 54-57. Neither the claimed utility tower, controller or a first and second network of claim 1 is disclosed or taught by Irwin. Accordingly, Applicant respectfully submits that Irwin does not teach or suggest the claimed controller communicating with a utility tower over a first network and a second network.

Applicant respectfully submits that at least these limitations are also not taught or suggested by Zeitlin. Zeitlin describes a system for controlling fermentation units similar to the one disclosed in Irwin. *See Zeitlin*, page 1, lines 2-6. The system contains a fermentation process control system 10 (the asserted "utility tower") coupled to a controller 20 (the asserted "controller") by a line or a bus. *See page 7, lines 10-28*. However, unlike the system of claim 1, the control system 10 ("utility tower") of Zeitlin has a microprocessor 45 that runs the fermentation process for the fermentation vessel 15. Zeitlin, page 6, 18-20; Figure 1. The master controller 20 allows intervention in any task run by the control system 10, but is not "configured with bioreactor control processes to monitor conditions in said first and second bioreactors and to control said utility tower functionality for affecting conditions in said first and second bioreactors" as in claim 1. Zeitlin, page 7, 17-20. Zeitlin merely teaches a single connection 16, not a first and second communication network connecting the utility tower and controller.

Irwin and Zeitlin Teach Away from the Claim Limitations

In fact, Zeitlin and Irwin *teach away* from the claimed invention because they both disclose a common configuration in which a controller runs a reactor control program, and a master controller (Irwin: workstation 14; Zeitlin: master controller 20) can be used to intervene in the process, if necessary. For example, Zeitlin teaches it is an object of the invention to have independently operable local digital controllers operating a plurality of control modules or tasks to regulate the process fermentation processes either singly or jointly in each fermentation vessel. Zeitlin, page 4, 11-17. Irwin discloses a controller 12 running a control process and directly controlling reactors 100, 200, 300, etc. Irwin, col. 4, 32-57; Figure 1. In the pending claims, the

utility tower provides all services to the bioreactors, and the controller is configured with the control process and provides control signals to the utility tower.

Besides being different from the claimed configuration, the effect of the system of both Irwin and Zeitlin facilitates a single network connection between the asserted controller and utility tower (Irwin connection 15; Zeitlin connection 16). Nowhere in Irwin and Zeitlin do they disclose multiple connections between the utility tower and the controller, nor are they necessary or desirable. In contrast, the limitations of claim 1 require "a controller configured with bioreactor control processes" in communication with "a utility tower configured to sense conditions in said first and second bioreactors and provide services to said first and second bioreactors that affect the conditions in said first and second bioreactors" via a first and second communication network. While a seemingly more complicated system, using multiple types of network connections in such a configuration can allow a more cost-effective way to communicate information to the controller 120.

Independent claims 3 and 38 also recite a similar configuration as in claim 1 for the utility tower and the controller, and at least a first and second communication network. Accordingly, Applicant respectfully submits that the cited references fail to teach or suggest at least one limitation from each claims 1, 3, and 38, and submits that the claims are in condition for allowance for at least the reasons stated above.

Dependent claims 2, 5-11, 14, and 16-24 depend directly or indirectly from claims 1 and 3, and therefore Applicant respectfully asserts claims 2, 5-11, 14, and 16-24 are also in condition for allowance for at least the same reasons, and requests the section 103 rejections be withdrawn.

Additional Grounds For Allowance Can be Found In The Dependent Claims

Applicant respectfully asserts that, at least, dependent claim 2 provides further limitations to the system that are not taught or disclosed in Irwin or Zeitlin:

The system of Claim 1, further comprising:

a third communication network;

a computer configured to accept input of a control command to change a desired condition in a desired connected bioreactor and send a command signal indicating the control command to said controller over said third network; and

wherein said controller is connected to said computer via said third communication network and is further configured to receive the command signal from said computer, determine a third control signal based on the command signal and send the third control signal to said utility tower over said second network, and wherein said utility

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tower is further configured to receive said third control signal and to change the desired condition in the desired connected bioreactor based on the third control signal.

The limitations of Claim 9 also include a third communication network over which the utility tower and controller communicate. Irwin and Zeitlin clearly do not teach or suggest a utility tower and a controller connected with the three communication networks, as recited in the limitations of claim 2. Instead, they disclose a single network connection between the asserted controller and utility tower (Irwin connection 15; Zeitlin connection 16).

Double Patenting

Claims 1-24 and 38 were rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 8-11, 14-22, 27, and 40-48 of copending Application No. 11/057,057. In response, Applicant agrees to file an appropriate terminal disclaimer for any claims in this applications that are deemed to be subject to a double patenting rejection upon resolution of the other claim rejections.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Summary

The applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections, and that the claims now be found in condition for allowance.

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Any claim amendments which are not specifically discussed in the above remarks are not made for patentability purposes, and it is believed that the claims would satisfy the statutory requirements for patentability without the entry of such amendments. Rather, these amendments have only been made to increase claim readability, to improve grammar, and to reduce the time and effort required of those in the art to clearly understand the scope of the claim language. No new matter has been added by any of the claim amendments as disclosure relating to any of the amendments can be found in the specification and claims as originally filed.

Should the Examiner have any remaining concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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